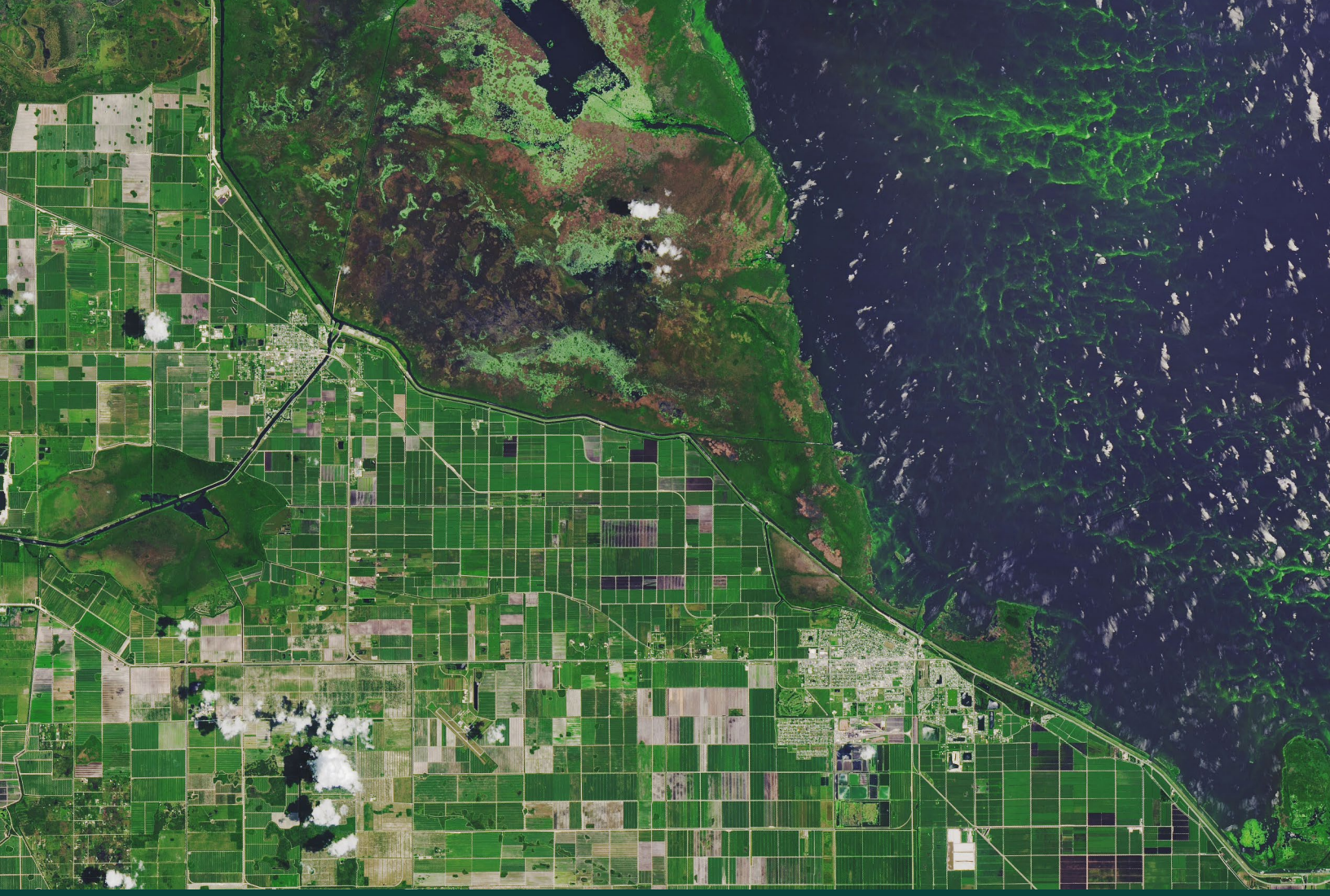


SUSTAINING ASSESSMENT

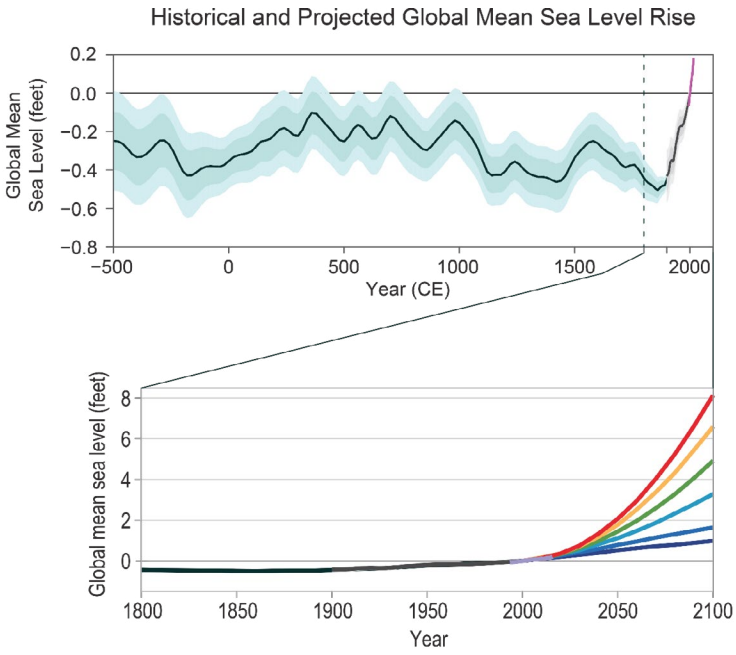
As required by the Global Change Research Act, USGCRP produces a quadrennial National Climate Assessment (NCA) that synthesizes understanding of present and future climate change processes and the ongoing and potential impacts across regions and sectors in the United States. Since the release of the NCA3 in 2014, USGCRP has transitioned towards a sustained assessment process that supports ongoing assessment and engagement processes, culminating in a quadrennial assessment. Agency and interagency assessment efforts provide technical inputs to the NCA and serve particular agency and interagency constituencies on an ongoing basis.

HIGHLIGHT 16
Providing the climate science foundation for the Fourth National Climate Assessment

An assessment of observed and projected climate trends in the United States forms the foundation for comprehensive analyses of climate-related vulnerabilities and risks.

USGCRP oversaw the production of the *Climate Science Special Report (CSSR)* as Volume I of the Fourth National Climate Assessment. CSSR assesses the state of knowledge on human-caused climate change, with a primary focus on the United States, including observed and future projected changes in temperatures, precipitation patterns, extreme weather events, sea-level rise, and ocean acidification. CSSR was released in November 2017 and provides the physical science foundation for a consistent assessment of climate-related risks and impacts across regions and sectors of the United States in NCA4 Volume II (*Impacts, Risks, and Adaptation in the United States*), released in late 2018. CSSR was developed as part of USGCRP's sustained assessment process, which facilitates ongoing participation of scientists and stakeholders in the integration of knowledge into assessment products and the quadrennial NCA, enabling new information and insights to be assessed as they emerge.

Following a public notice for author nominations, the CSSR Federal steering committee selected 30 scientists from Federal agencies, national laboratories, universities, and the private sector as Lead Authors. Contributing Authors were later chosen to provide input on select areas of the assessment. NOAA served as the administrative lead agency for preparation of the report. CSSR was reviewed multiple times by USGCRP agencies as well as the public and the National Academies of Sciences, Engineering, and Medicine. The report is available at https://science2017.globalchange.gov.



The top panel shows observed and reconstructed global mean (average) sea level for the last 2,500 years. The bottom panel shows projected mean sea level for six future climate change scenarios. The six scenarios—spanning a range designed to inform a variety of decisions—extend from a low scenario, consistent with continuation of the rate of sea level rise over the last quarter century, to an extreme scenario, assuming rapid mass loss from the Antarctic ice sheet. Note that the range on the vertical axis in the bottom graph is approximately ten times greater than in the top graph. Source: Climate Science Special Report Executive Summary, Figure 8, based on Figures 12.2 and 12.4 in Chapter 12 of the full report.

HIGHLIGHT 17
Engaging the public in assessing climate change impacts and risks in the United States

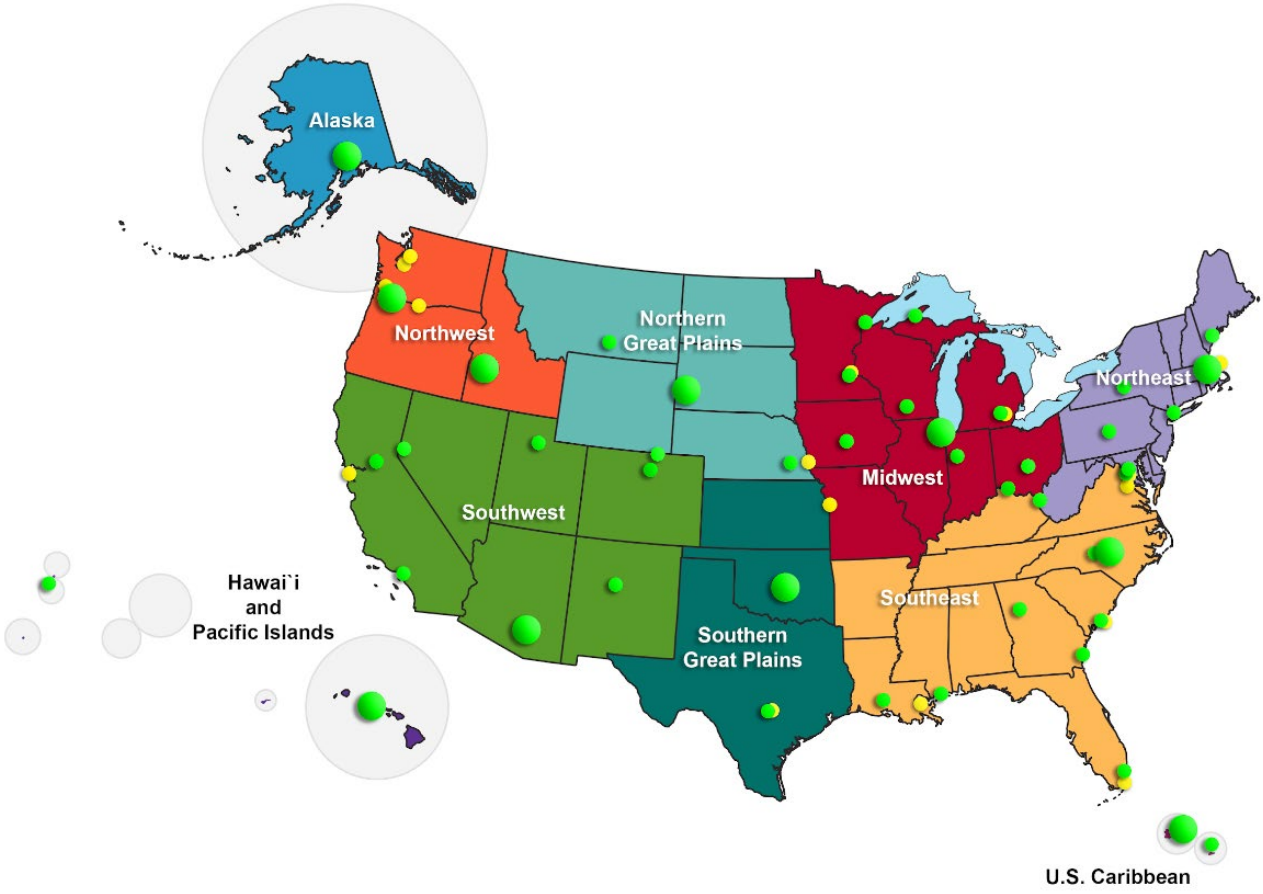
Strong engagement efforts help ensure that USGCRP assessment products are relevant and accessible to users.

USGCRP recently finalized the fourth installment of the National Climate Assessment (NCA4). Volume I (the *Climate Science Special Report*, see Highlight 16) was released in November 2017, and Volume II (*Impacts, Risks, and Adaptation in the United States*) was released in late 2018. A USGCRP Sustained Assessment Report, the *Second State of the Carbon Cycle Report* (SOCCR2), was also released in late 2018. To ensure that these assessments provide relevant, usable science for stakeholders, USGCRP agency representatives, working groups, staff, and authors implemented an extensive engagement plan to gather public feedback during the development, drafting, and review phases.

For NCA4 Volume II, these opportunities included a call for public comment on the draft prospectus in July 2016, a public call for author nominations (Sep. 2016), a call for submission of technical inputs to the assessment (Aug. 2016–Jan. 2017), a description of public engagement opportunities (ongoing), a public call for review editors (Jul.–Sep. 2017), and an opportunity for the public to review the draft report (Nov. 2017–Jan. 2018). For SOCCR2, opportunities included a call for public comment on the draft prospectus, technical inputs, and nominations for technical contributors (Feb.–Mar. 2016); a description of public engagement opportunities (ongoing); a public call for review editors (Jul. 2017); and an opportunity for the public to review the draft report (Nov. 2017–Jan. 2018). These calls led to hundreds of author nominations and technical inputs and thousands of public comments, which will be available online upon release of each report.

Unique to NCA4 Volume II, a series of regional engagement workshops allowed for the gathering of regional input to the report. In early 2017, USGCRP staff and representatives rom USGCRP member agencies worked with regional authors and collaborators to host a series of regional engagement workshops in each NCA4 region (see figure). These workshops used a hub-and-satellite model to better enable participation from individuals who may have otherwise been unable to attend. For example, the Midwest regional engagement workshop hub was held in Chicago, with nine total satellite locations in seven of the eight Midwest region's states, including two each in Ohio, Michigan, and Minnesota. In total, NCA4 author teams gathered input from more than 1000 participants in 46 cities. Each regional engagement workshop was followed by a one-day author team meeting to discuss how feedback received could inform chapter development.

Throughout the development of both NCA4 Volume II and SOCCR2, report authors, agency representatives, USGCRP staff, and stakeholders from academia, state, local, and tribal governments, as well as the non-profit and private sectors spoke at and participated in sessions at professional society meetings, web-based seminars, community meetings, and other events aimed at providing an overview of the respective assessment processes and opportunities for engagement. As the sustained assessment process moves forward, agencies, staff, and authors continue to provide the public with information about upcoming events as well as opportunities to provide feedback on the process and products, and seek venues to disseminate findings from USGCRP's assessment products.



Locations of regional engagement workshop hubs and satellites (green) and NCA4 participation at professional conferences, meetings and other events (yellow) through May 2018. Source: USGCRP.

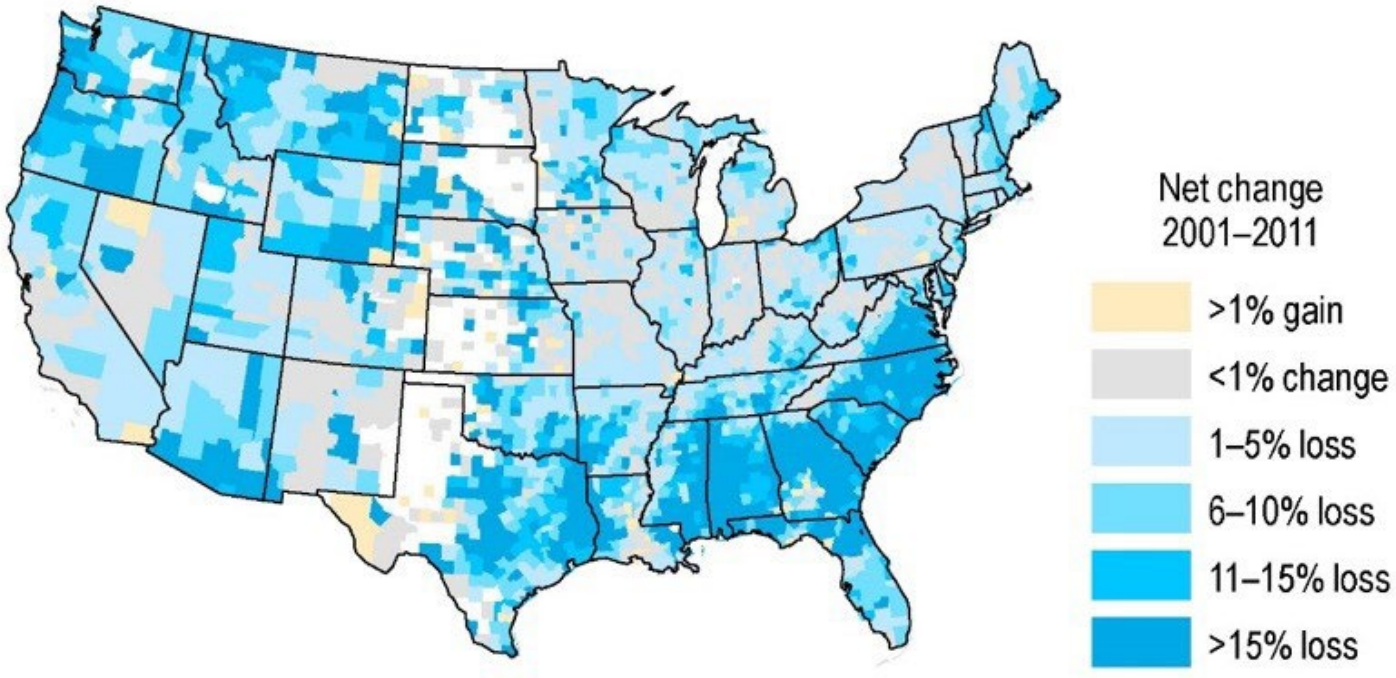
HIGHLIGHT 18
Assessing the future of America's forests and rangelands

A report on the status of America's forests and rangelands provides a baseline for monitoring future change and its effect on ecosystem services and livelihoods.

Expanding populations, increased urbanization, land use change, and climate change continue to affect American forests and rangelands. Climate change and natural disturbances will alter forest and rangeland ecosystems and affect their ability to provide ecosystem services such as water quality protection, removal of pollutants from the atmosphere, and outdoor recreation. The most recent Resources Planning Act (RPA) Assessment update, released by the USDA-Forest Service in December 2016, tracks historical trends in these ecosystems and provides a look into their future, as mandated by Congress in 1974[24]. The RPA Assessment is the product of Forest Service scientists and numerous university partners.

The report highlights key trends and projections that inform land managers and policy makers in their work to sustain important ecosystems for current and future generations. While total forest area remains relatively stable, the breakdown of large, continuous forest cover into smaller patches continued from 2001 to 2011, which can increase the risk of forest degradation from nearby human activities and alter the type and quality of ecosystem services provided (see figure). U.S. forests continue to store more carbon than they release to the atmosphere, but forests are accumulating carbon at a decreasing rate, primarily as a result of land use change and forest aging. Continued development is expected to reduce forest area in future decades. Wildlife habitats, already affected by breakdown of forest cover and conversion from native vegetation, are expected to be stressed further by the effects of climate change.

Net change in interior forest cover from 2001–2011, by county (38-acre scale)



The greatest decrease in intact forest cover 2001–2011 occurred in interior forests, which include forest cover surrounded by a 38-acre neighborhood that is at least 90 percent forested. Counties are shaded and state boundaries shown for reference; counties without color had no interior forest cover in 2001 and/or 2011. Source: USDA-Forest Service.